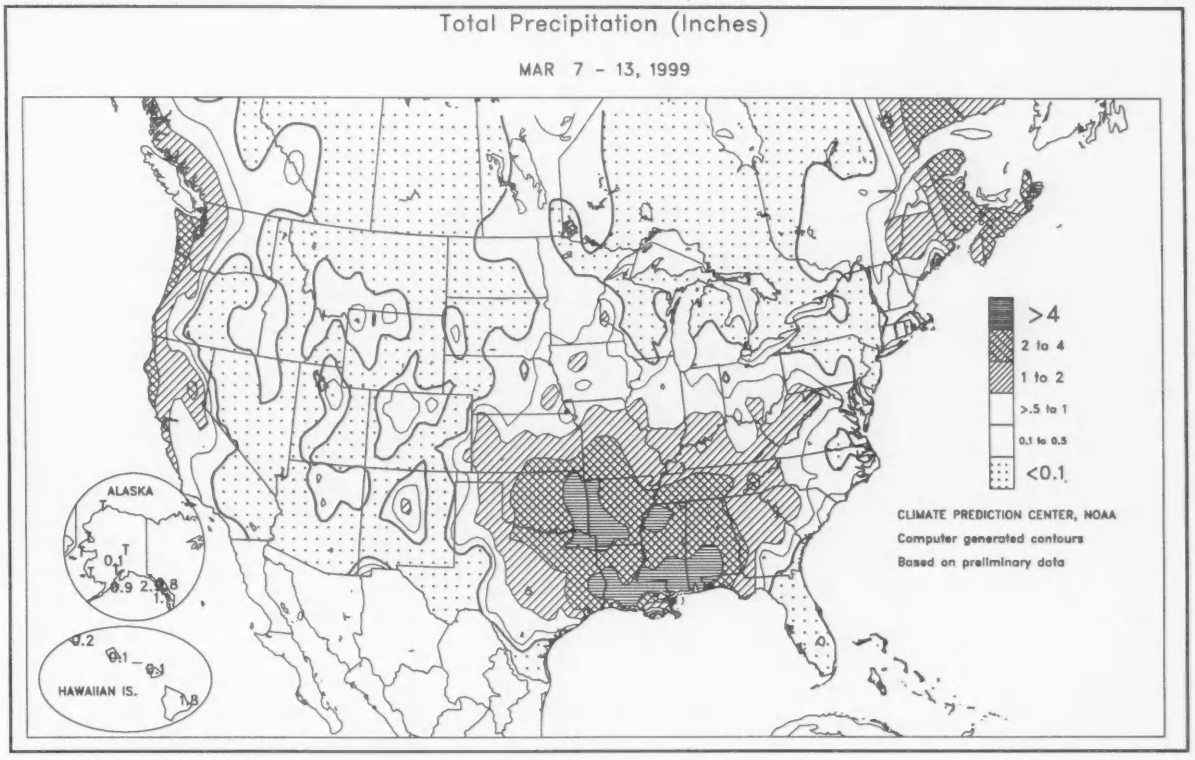
Volume 86, No. 11 March 16, 1999

WEEKLY WEATHER AND CROP BULLETIN

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service

U.S. DEPARTMENT OF AGRICULTURE
National Agricultural Statistics Service
and World Agricultural Outlook Board



HIGHLIGHTS

March 7 - 13, 1999

Two major storm systems delivered much-needed precipitation to the **central and southern Plains**, significantly improving soil moisture for hard red winter wheat. Rain also fell across the **Southeast**, improving pre-planting moisture. Weekly rainfall topped 4 inches in the **Arklatex and central Gulf Coast regions**. Mostly dry weather persisted, however, across extreme **southern and western Texas** and most of the **Southwest**. At week's end, heavy snow blanketed a narrow band from **southeastern Colorado, western Kansas**, and **northern Oklahoma** to the **Ohio Valley**. The snow insulated winter wheat against post-storm temperatures that dropped below 10°F in some areas.

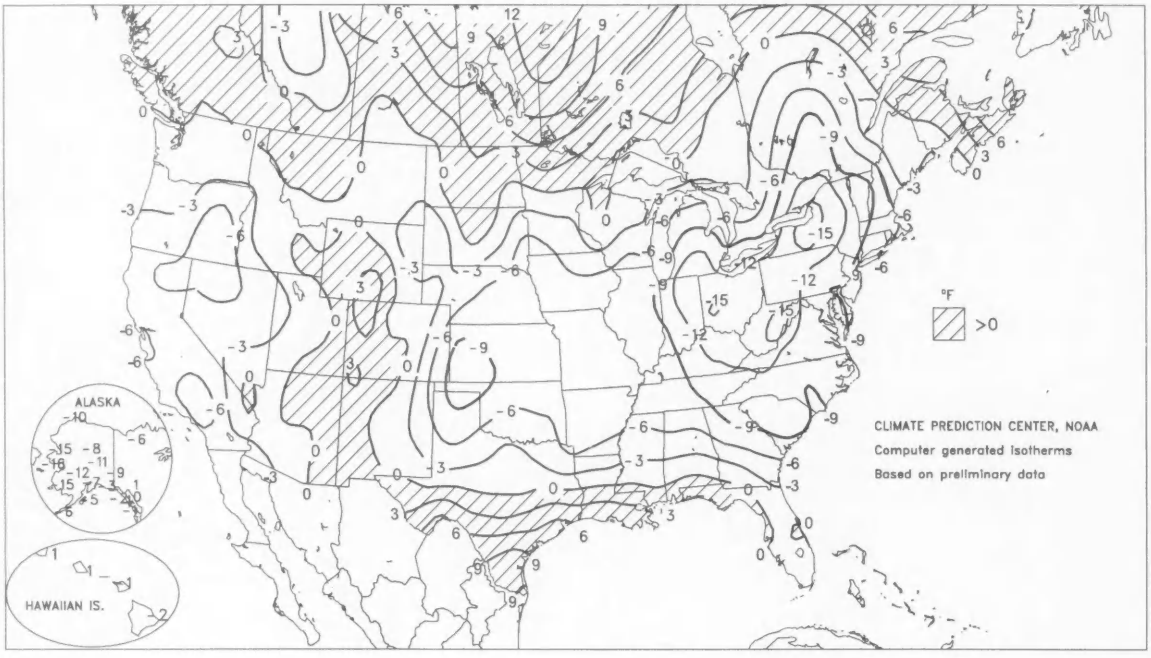
(Continued on page 3)

Contents

Temperature Departure & Snow Cover Maps 2
Extreme Maximum & Minimum Temperature Maps 3
National Weather Data for Selected Cities 4
National Agricultural Summary & Soil Temperature Map 7
Winter Weather Review 8
Winter Temperature & Precipitation Maps ... 9
Water Supply Forecast for the Western U.S. 10
International Weather and Crop Summary 12
La Niña Update 15
Weather Data for the Delta & U.S. Crop Production Highlights 16

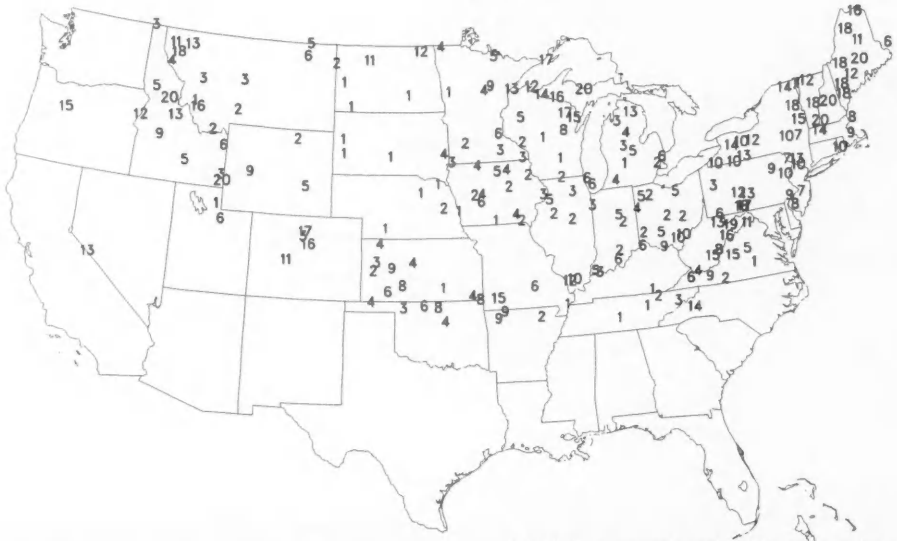
Departure of Average Temperature from Normal (°F)

MAR 7 - 13, 1999



Snow Depth (Inches)

Mar 15, 1999



Experimental product based on preliminary data

The NWS co-operative network is the principal source of the snow depth reports.

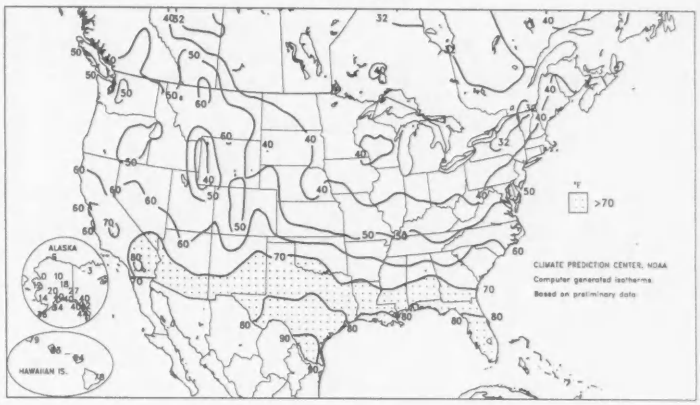
NOAA/USDA JOINT AGRICULTURAL WEATHER FACILITY

(Continued from front cover)

Temperatures also dipped below 10°F from the **upper Midwest** to the **Northeast**, following earlier snowfall. In fact, much colder weather prevailed nearly nationwide, slowing or halting winter grain development. Temperatures were not low enough across the **South**, however, to harm winter wheat, fruit tree blooms, or newly planted spring crops. Nevertheless, weekly temperatures averaged 4 to 10°F below normal on the **central and southern Plains**, ending an 8-week warm spell, and as much as 15°F below normal in the **eastern Corn Belt**. Temperatures remained below 40°F for the entire week in most of the **Corn Belt**. Readings were as much as 6°F below in **California**, slowing fieldwork and perpetuating a 7-week cool spell.

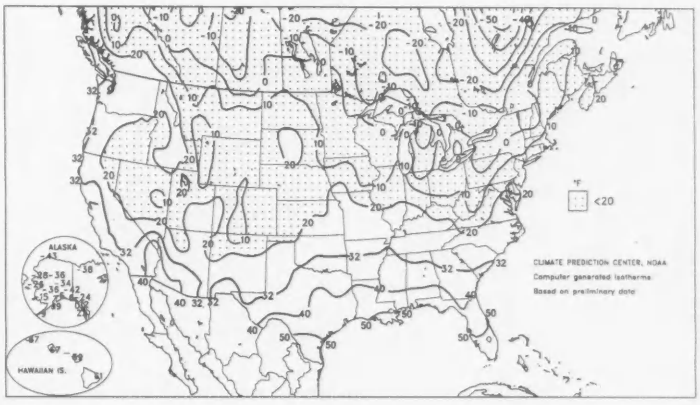
Extreme Maximum Temperature (°F)

MAR 7 - 13, 1999



Extreme Minimum Temperature (°F)

MAR 7 - 13, 1999



Early in the week, very cold weather gripped the **Great Lakes and Northeastern States**, especially in deeply snow-covered areas. On Sunday in **Michigan**, daily-record lows included -6°F in **Flint** (with a 10-inch snow depth) and -13°F in **Lansing** (7-inch depth). A day later in **New York, Rochester**–with 31 inches of snow on the ground–logged a March record-tying low of -7°F (previously achieved on March 5, 1872, and March 13, 1885). Elsewhere in **northern and western New York**, lows on March 8 dipped to -18°F in **Watertown** and -20°F in **Angelica**.

On March 8-9, heavy snow fell in a narrow band from the **upper Midwest** to the **Mid-Atlantic region**. **Minneapolis, MN** netted 16.0 inches, including a daily-record snowfall (12.5 inches) on Monday. Elsewhere, storm-total snowfall reached 11.8 inches in **Chicago, IL**, 11.3 inches in **Des Moines, IA**, 7.8 inches in **Dayton, OH**, and 7.1 inches in **Ft. Wayne, IN**. In **Washington, DC**, storm-total snowfall of 8.4 inches accounted for 74 percent of their season-to-date total. In the snow's wake, March 11 temperatures in **West Virginia** fell to daily-record levels at **Parkersburg** (11°F) and **Elkins** (-2°F). Farther south, rain spread eastward from the **central and southern Plains**, although wet snow and sleet was reported as far south as the **southern Appalachians**.

Significant precipitation returned to the **central and southern Plains** on March 12-13, leaving only portions of **western and southern Texas** unfavorably dry. In **Kansas**, storm-total snowfall reached 17.4 inches in **Dodge City**, 9.7 inches in **Goodland**, and 8.1 inches in **Wichita**. Prior to the storm, season-to-date snowfall in **Wichita** stood at 1.2 inches. On the **Ozark Plateau**, March 12-14 snowfall totaled 23.0 inches in **Cassville, MO** and 14.3 inches in **Springfield, MO**. Most of **Springfield's** snow (14.0 inches) fell in a 24-hour period on March 13-14, their second-highest March total behind 15.7 inches on March 16, 1970. The largest storm total in **northern Oklahoma**, 19 inches at **Medford**, ranked as the fourth-highest peak snowfall for any storm in the State, trailing events on February 21-22, 1971 (36 inches in **Buffalo**), November 25, 1992 (22 inches in **Laverne**), and March 16, 1970 (20 inches in **Bartlesville**).

Farther south, daily-record rainfall occurred on Friday in **Oklahoma City, OK** (1.81 inches) and **Wichita Falls, TX** (2.87 inches). A day later, **Oklahoma City** received 1.3 inches of snow. Through March 14, month-to-date rainfall reached 3.93 inches in **Wichita Falls**, 4.11 inches in **Baton Rouge, LA**, 4.34 inches in **Meridian, MS**, and 5.02 inches in **Montgomery, AL**. In **Florida**, 1.72 inches of rain dampened **Tallahassee** on March 14, boosting their year-to-date rainfall to 8.99 inches (67 percent of normal). In **Miami, FL**, however, February 1 - March 14 rainfall remained well below normal, at 0.50 inch (16 percent of normal).

Similarly, year-to-date precipitation reached 0.66 inch (16 percent of normal) in **San Antonio, TX**, 0.57 inch of which fell during the late-week period. No measurable rain fell during the storm in **Midland, TX**, leaving their 1999 total at 0.33 inch (25 percent). Dry weather also continued in **Tucson, AZ**, where measurable precipitation fell only once (0.01 inch on January 26) during the 98-day period from December 7 to March 14. In contrast, October 1 - March 13 precipitation surged to 104.65 inches (148 percent of normal) in **Quillayute, WA**, exceeding their previous record of 103.62 inches, set in 1974-75.

In **Alaska**, very cold weather (5 to 16°F below normal, except in southeastern areas) prevailed for a second consecutive week. On Wednesday, daily record-tying lows were noted in **McGrath** (-36°F) and **Barrow** (-43°F).

National Weather Data for Selected Cities

Weather Data for the Week Ending March 13, 1999

Data Provided by Climate Prediction Center (301-763-8000 EXT. 7503) and the Southern Regional Climate Center

STATES AND STATIONS		TEMPERATURE °F						PRECIPITATION							RELATIVE HUMIDITY, PERCENT		NUMBER OF DAYS			
																	TEMP. °F		PRECIP	
		AVERAGE MAXIMUM	AVERAGE MINIMUM	EXTREME HIGH	EXTREME LOW	AVERAGE	DEPARTURE FROM NORMAL	WEEKLY TOTAL, IN.	DEPARTURE FROM NORMAL	GREATEST IN 24-HOUR, IN.	TOTAL IN. SINCE Dec 1	PCT. NORMAL SINCE Dec 1	TOTAL IN. SINCE Jan 1	PCT. NORMAL SINCE Jan 1	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE
AL	*BIRMINGHAM*	*59*	*38*	*65*	*33*	*48*	*-4*	1.47	0.06	0.68	3.99	156	14.88	120	78	27	0	0	4	2
	HUNTSVILLE	52	34	57	30	43	-7	2.13	0.62	1.57	4.20	153	16.20	127	84	38	0	2	5	1
	MOBILE	68	50	*81*	47	*59*	0	*8.06*	*6.57*	*3.86*	*8.52*	*309*	*14.81*	*114*	*94*	*49*	*0*	*0*	*4*	*3*
	MONTGOMERY	64	42	74	38	53	-2	5.02	3.56	3.07	6.81	253	11.69	91	81	31	0	0	3	3
AK	ANCHORAGE	25	10	40	-6	17	-7	0.01	-0.16	0.00	0.14	45	0.78	42	84	47	0	7	1	0
	BARROW	-19	-34	-6	-43	-27	-10	*0.03*	*0.00*	*0.02*	*0.07*	*140*	*0.24*	*86*	*75*	*68*	*0*	*7*	*2*	*0*
	FAIRBANKS	9	-16	18	-34	-4	-11	0.04	-0.04	0.03	0.16	107	0.61	58	81	56	0	7	2	0
	JUNEAU	35	27	42	12	31	0	0.77	0.00	0.31	0.99	69	11.72	120	92	61	0	3	6	0
	KODIAK	31	23	34	19	27	-5	*0.93*	*-0.14*	*0.74*	*0.99*	*49*	*12.66*	*86*	*82*	*56*	*0*	*7*	*4*	*1*
	NOME	0	-18	12	-26	-9	-16	0.01	-0.10	0.00	0.01	5	2.17	136	83	55	0	7	1	0
AZ	FLAGSTAFF	46	23	58	15	35	1	0.23	-0.35	0.23	1.49	20	0.99	19	85	28	0	7	1	0
	PHOENIX	70	49	76	47	60	-1	*0.03*	*-0.19*	*0.03*	*0.03*	*7*	*0.21*	*12*	*59*	*20*	*0*	*8*	*1*	*0*
	TUCSON	71	43	77	38	57	-1	0.00	-0.17	0.00	0.00	0	0.01	1	46	12	0	0	0	0
	YUMA	71	48	77	42	60	-4	0.00	-0.06	0.00	0.00	0	0.60	90	66	23	0	0	0	0
AR	FORT SMITH	52	36	*61*	32	44	-5	3.37	2.50	1.57	3.49	222	6.78	112	93	54	0	1	4	3
	LITTLE ROCK	50	37	61	33	44	-8	1.45	0.38	1.09	1.69	88	10.51	117	92	59	0	0	4	1
CA	BAKERSFIELD	60	39	73	34	50	-7	0.05	-0.20	0.03	0.05	11	4.43	186	85	39	0	0	2	0
	EUREKA	53	38	60	32	46	-4	*1.71*	*0.45*	*0.82*	*2.35*	*101*	*17.04*	*130*	*85*	*60*	*0*	*1*	*4*	*2*
	FRESNO	61	41	72	35	51	-3	0.12	-0.32	0.10	0.20	24	4.20	92	88	36	0	0	2	0
	LOS ANGELES	60	47	69	43	53	-4	0.27	-0.23	0.16	0.28	29	2.69	46	82	52	0	0	2	0
	REDDING	57	37	62	31	47	-4	*1.09*	*0.03*	*0.55*	*1.34*	*68*	*12.11*	*97*	*89*	*33*	*0*	*2*	*3*	*2*
	SACRAMENTO	57	38	63	35	48	-5	0.72	0.09	0.67	0.83	71	8.23	106	95	41	0	0	2	1
	SAN DIEGO	62	51	68	48	57	-3	0.30	-0.11	0.17	0.39	51	2.63	64	77	47	0	0	3	0
	SAN FRANCISCO	*54*	*43*	*57*	*40*	*48*	*-5*	*1.35*	*0.61*	*0.70*	*1.52*	*110*	*9.10*	*102*	*90*	*55*	*0*	*0*	*2*	*2*
CO	ALAMOSA	49	14	54	6	32	1	0.13	0.03	0.06	0.13	76	0.20	28	84	18	0	7	2	0
	CO SPRINGS	47	24	57	19	36	0	0.10	-0.10	0.04	0.10	29	0.27	26	80	29	0	7	1	0
	DENVER	*49*	*23*	*60*	*19*	*36*	*-1*	*0.08*	*-0.18*	*0.07*	*0.20*	*43*	*0.75*	*49*	*86*	*25*	*0*	*7*	*1*	*0*
	GRAND JUNCTION	56	32	62	25	44	2	0.03	-0.17	0.03	0.03	9	0.40	28	65	18	0	3	1	0
	PUEBLO	53	23	67	15	38	-2	0.33	0.16	0.31	0.33	114	0.48	51	82	36	0	6	2	0
CT	*BRIDGEPORT*	*37*	*21*	*47*	*14*	*29*	*-8*	*0.10*	*-0.73*	*0.08*	*1.19*	*78*	*11.64*	*150*	*66*	*36*	*0*	*7*	*2*	*0*
	HARTFORD	36	19	48	12	28	-8	0.02	-0.78	0.01	1.70	115	10.46	129	65	35	0	7	2	0
DC	WASHINGTON	40	27	46	20	33	-12	0.72	0.00	0.72	1.40	105	9.36	138	71	37	0	7	1	1
DE	*WILMINGTON*	*40*	*24*	*49*	*17*	*32*	*-9*	*0.00*	*-0.77*	*0.00*	*0.75*	*53*	*9.69*	*131*	*62*	*32*	*0*	*7*	*0*	*0*
FL	DAYTONA BEACH	73	52	80	46	63	-1	0.00	-0.69	0.00	0.00	0	6.63	93	87	43	0	0	0	0
	JACKSONVILLE	68	43	74	39	55	-5	0.06	-0.81	0.00	0.15	9	6.29	71	90	42	0	0	1	0
	KEY WEST	*77*	*66*	*81*	*60*	*72*	*-1*	*0.00*	*-0.39*	*0.00*	*0.71*	*97*	*4.79*	*105*	*91*	*59*	*0*	*0*	*0*	*0*
	MIAMI	78	63	81	58	70	-1	0.00	-0.53	0.00	0.05	5	3.30	65	84	48	0	0	0	0
	ORLANDO	77	52	83	48	65	-1	0.00	-0.78	0.00	0.02	1	3.28	48	93	39	0	0	0	0
	PENSACOLA	*70*	*52*	*81*	*50*	*61*	*2*	*3.23*	*1.90*	*1.57*	*3.70*	*149*	*10.33*	*82*	*89*	*44*	*0*	*0*	*3*	*2*
	TALLAHASSEE	72	48	76	42	60	1	0.46	-1.02	0.44	1.36	49	7.28	56	85	33	0	0	3	0
	TAMPA	77	55	82	51	*66*	0	*0.03*	*-0.73*	*0.03*	*0.04*	3	3.37	52	90	41	*0*	*0*	*1*	*0*
	WEST PALM	*78*	*59*	*84*	*54*	*68*	*-1*	*0.05*	*-0.80*	*0.05*	*0.17*	*11*	*8.58*	*122*	*85*	*44*	*0*	*0*	*1*	*0*
GA	ATHENS	52	33	60	29	42	-10	0.90	-0.36	0.39	1.54	67	9.69	85	81	34	0	3	3	0
	ATLANTA	51	34	59	30	43	-9	*1.85*	*0.52*	*0.72*	*2.67*	*109*	*9.98*	*83*	*77*	*29*	*0*	*1*	*4*	*1*
	AUGUSTA	56	34	61	27	45	-9	0.32	-0.77	0.31	0.66	34	8.76	85	88	26	0	4	2	0
	COLUMBUS	64	41	73	39	53	-3	1.31	-0.02	0.90	1.71	70	7.55	64	74	22	0	0	3	1
	MACON	61	37	64	33	49	-6	*0.53*	*-0.60*	*0.36*	*0.97*	*46*	*9.14*	*80*	*86*	*31*	*0*	*0*	*4*	*0*
	SAVANNAH	63	39	68	35	51	-7	0.24	-0.63	0.24	0.33	21	8.39	100	90	33	0	0	1	0
HI	HILO	77	63	78	61	70	-2	1.81	-1.19	0.84	2.09	39	36.27	142	95	65	0	0	7	1
	HONOLULU	*81*	*69*	*83*	*67*	*75*	*1*	*0.12*	*-0.40*	*0.04*	*0.12*	*12*	*2.98*	*44*	*82*	*49*	*0*	*0*	*3*	*0*
	KAHULUI	81	64	84	59	72	-1	0.12	-0.51	0.00	0.12	10	4.25	52	89	51	0	0	2	0
	LIHUE	78	70	79	67	74	2	0.21	-0.72	0.12	0.21	12	5.78	53	86	64	*0*	*0*	*3*	*0*
ID	BOISE	47	31	55	26	39	-2	0.38	0.10	0.13	0.50	96	3.85	127	88	39	0	5	4	0
	LEWISTON	49	31	56	27	40	-3	0.12	-0.13	0.08	0.31	70	2.20	84	83	38	0	6	2	0
	POCATELLO	43	27	53	22	35	0	0.19	-0.09	0.15	0.35	70	2.99	122	87	44	0	7	1	0
IL	CHICAGO/O'HARE	33	20	37	15	26	-9	0.67	0.12	0.25	0.98	103	7.09	184	87	53	0	7	4	0
	MOLINE	33	18	37	5	26	-9	0.14	-0.47	0.12	0.55	52	4.59	120	90	59	0	7	2	0
	PEORIA	35	23	38	15	29	-8	0.20	-0.40	0.17	0.80	76	5.04	126	90	58	0	7	2	0
	ROCKFORD	33	17	38	4	25	-8	0.12	-0.37	0.05	0.34	40	4.61	140	95	54	0	7	3	0
	SPRINGFIELD	35	25	39	15	30	-8	0.28	-0.41	0.25	0.93	76	5.02	111	87	60	0	7	2	0
IN	EVANSVILLE	42	28	49	21	35	-9	1.18	0.12	0.61	2.09	109	10.03	130	78	46	0	5	3	2
	FORT WAYNE	30	11	35	3	21	-15	0.27	-0.35	0.15	1.14	103	6.46	132	89	56	0	7	2	0
	INDIANAPOLIS	34	23	39	17	28	-11	0.68	-0.15	0.40	1.73	115	11.65	186	83	47	0	7	2	0
	SOUTH BEND	31	11	38	-1	21	-14	0.13	-0.52	0.09	1.27	110	5.97	113	88	47	0	7	2	0
IA	BURLINGTON	37	26	40	16	31	-5	0.22	-0.37	0.20	0.40	39	5.14	150	80	53	0	7	2	0
	CEDAR RAPIDS	32	17	36	4	24	-8	0.10	-0.37	0.07	0.21	26	4.08	144	91	59	0	7	1	0
	DES MOINES	33	24	38	19	28	-6	0.47	0.00	0.45	0.70	85	2.93	102	89	57	0	7	3	0
	DUBUQUE	32	17	37	7	24	-7	0.56	-0.03	0.47	0.63	61	3.75	104	89	52	0	7	2	0
	SIOUX CITY	33	19	40	12	26	-7	0.28	-0.13	0.13	0.36	50	1.50	77	93	57	0	7	4	0
	WATERLOO	34	18	41	10	26	-5	0.20	-0.27	0.16	0.25	30	2.45	91	92	55	0	7	2	0
KS	CONCORDIA	37	26	41	17	32	-8	0.80	0.32	0.57	0.81	98	1.58	73	96	63	0	7	4	1
	DODGE CITY	38	26	50	17	32	-10	1.45	1.13	0.71	1.45	259	3.43	205	94	71	0	7	5	1
	GOODLAND	38	19	50	9	28	-9	0.76	0.50	0.47	0.76	169	1.33	109	94	65	0	7	3	0
	TOPEKA	41	28	45	25	35	-7	0.59	0.07	0.50	0.89	99	3.00	104	92	51	0	6	4	1

Based on 1961-90 normals

Weather Data for the Week Ending March 13, 1999

STATES AND STATIONS		TEMPERATURE °F						PRECIPITATION							RELATIVE HUMIDITY, PERCENT		NUMBER OF DAYS			
																	TEMP. °F		PRECIP	
		AVERAGE MAXIMUM	AVERAGE MINIMUM	EXTREME HIGH	EXTREME LOW	AVERAGE	DEPARTURE FROM NORMAL	WEEKLY TOTAL, IN.	DEPARTURE FROM NORMAL	GREATEST IN 24-HOUR, IN.	TOTAL, IN., SINCE Dec 1	PCT. NORMAL SINCE Dec 1	TOTAL, IN., SINCE Jan 1	PCT. NORMAL SINCE Jan 1	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE
	WICHITA	43	30	48	25	36	-7	1.52	0.99	0.87	1.52	163	3.26	121	93	59	0	6	5	2
KY	*JACKSON*	*39*	*24*	*44*	*20*	*32*	*-13*	*0.66*	*-0.43*	*0.49*	*1.93*	*96*	*11.55*	*121*	*80*	*41*	*0*	*6*	*4*	*0*
	LEXINGTON	39	23	44	19	31	-12	0.88	-0.11	0.61	1.92	107	10.41	132	85	45	0	7	4	1
	LOUISVILLE	41	27	48	22	34	-10	0.76	-0.28	0.37	1.64	87	11.26	140	78	39	0	6	3	0
	PADUCAH	*45*	*31*	*49*	*26*	*38*	*-7*	*0.64*	*-0.45*	*0.42*	*1.73*	*87*	*10.09*	*110*	*81*	*47*	*0*	*5*	*3*	*0*
LA	BATON ROUGE	71	50	80	48	61	1	1.07	-0.01	0.70	1.82	89	8.78	70	93	50	0	0	5	1
	LAKE CHARLES	73	53	81	47	63	4	2.53	1.77	1.68	3.05	215	9.81	103	97	64	0	0	4	2
	NEW ORLEANS	*72*	*55*	*80*	*50*	*64*	*3*	*2.06*	*0.91*	*1.77*	*2.37*	*108*	*6.49*	*49*	*90*	*54*	*0*	*0*	*4*	*1*
	SHREVEPORT	61	45	74	41	53	-3	2.45	1.63	1.12	3.30	214	16.69	178	94	54	0	0	5	2
ME	CARIBOU	28	17	42	5	23	1	0.64	0.10	0.26	1.00	102	5.96	112	89	63	0	7	7	0
	PORTLAND	*35*	*21*	*46*	*10*	*28*	*-3*	*0.27*	*-0.53*	*0.11*	*1.21*	*82*	*11.23*	*135*	*77*	*44*	*0*	*6*	*3*	*0*
MD	BALTIMORE	39	25	48	19	32	-10	0.39	-0.38	0.37	1.09	76	8.44	111	74	36	0	7	2	0
MA	BOSTON	36	22	48	13	29	-8	0.09	-0.74	0.05	1.20	78	10.40	119	74	45	0	6	2	0
	WORCESTER	*33*	*17*	*44*	*9*	*25*	*-6*	*0.13*	*-0.75*	*0.01*	*1.70*	*105*	*11.09*	*127*	*72*	*41*	*0*	*7*	*3*	*0*
MI	ALPENA	29	7	33	-10	18	-8	0.00	-0.46	0.00	0.57	70	4.32	116	80	40	0	7	0	0
	GRAND RAPIDS	31	12	38	2	22	-10	0.07	-0.47	0.02	0.71	75	5.73	136	83	40	0	7	2	0
	HOUGHTON LAKE	*32*	*5*	*37*	*-10*	*18*	*-7*	*0.07*	*-0.36*	*0.00*	*0.36*	*47*	*3.51*	*102*	*83*	*36*	*0*	*7*	*2*	*0*
	LANSING	30	7	34	-13	18	-13	0.30	-0.18	0.29	0.94	111	4.25	115	87	50	0	7	2	0
	MARQUETTE	29	2	38	-18	16	-5	0.00	-0.61	0.00	0.61	56	8.70	174	85	41	0	7	0	0
	MUSKEGON	*33*	*14*	*39*	*1*	*24*	*-7*	*0.05*	*-0.48*	*0.02*	*0.45*	*48*	*4.16*	*87*	*83*	*34*	*0*	*7*	*1*	*0*
MN	DULUTH	30	11	37	-3	21	-1	0.11	-0.29	0.05	0.18	26	1.69	62	94	54	0	7	3	0
	INT'L FALLS	34	11	37	-3	22	4	0.33	0.11	0.18	0.46	121	1.04	55	89	43	0	7	3	0
	MINNEAPOLIS	*34*	*15*	*39*	*5*	*25*	*-3*	*0.23*	*-0.18*	*0.17*	*0.30*	*42*	*3.36*	*132*	*92*	*46*	*0*	*7*	*2*	*0*
	ROCHESTER	31	16	37	9	24	-3	0.10	-0.25	0.05	0.11	18	3.19	150	90	56	0	7	2	0
	ST. CLOUD	33	12	37	2	22	-2	0.52	0.24	0.39	0.58	121	1.49	81	93	51	0	7	2	0
MS	*JACKSON*	*62*	*44*	*69*	*37*	*53*	*-2*	*2.48*	*1.18*	*1.14*	*3.10*	*131*	*13.61*	*111*	*90*	*48*	*0*	*0*	*3*	*2*
	MERIDIAN	62	43	71	37	53	-2	3.91	2.37	2.48	4.43	158	12.23	91	82	38	0	0	4	2
	TUPELO	55	37	60	33	46	-6	3.00	1.63	1.85	6.31	252	20.78	172	84	36	0	0	4	2
MO	*COLUMBIA*	*39*	*27*	*42*	*22*	*33*	*-8*	*1.21*	*0.54*	*1.13*	*1.65*	*138*	*6.25*	*139*	*91*	*63*	*0*	*7*	*2*	*1*
	KANSAS CITY	39	27	43	23	33	-7	0.81	0.28	0.72	1.17	126	5.22	167	90	55	0	7	3	1
	SAINT LOUIS	40	29	44	20	34	-8	0.91	0.12	0.85	1.39	99	9.99	187	82	50	0	5	2	1
	SPRINGFIELD	43	30	47	25	37	-7	1.91	1.07	1.23	2.54	170	8.39	154	91	54	0	5	3	1
MT	BILLINGS	41	22	59	13	31	-3	0.00	-0.24	0.00	0.78	190	1.85	93	95	55	0	7	0	0
	BUTTE	*40*	*13*	*52*	*4*	*26*	*0*	*0.28*	*0.11*	*0.20*	*0.49*	*169*	*1.40*	*115*	*92*	*43*	*0*	*7*	*3*	*0*
	GLASGOW	33	17	42	9	25	-2	0.10	0.02	0.09	0.26	173	1.65	212	94	75	0	7	2	0
	GREAT FALLS	45	21	61	10	33	2	0.04	-0.19	0.00	0.14	34	0.83	44	82	32	0	6	2	0
	KALISPELL	*45*	*23*	*54*	*19*	*34*	*2*	*0.55*	*0.33*	*0.28*	*0.87*	*207*	*3.43*	*112*	*88*	*38*	*0*	*7*	*2*	*0*
	MILES CITY	42	24	63	21	33	2	0.01	-0.10	0.01	0.06	30	0.69	58	93	46	0	7	1	0
	MISSOULA	46	26	58	20	36	2	0.03	-0.19	0.02	0.29	71	2.35	96	83	34	0	6	1	0
NE	*GRAND ISLAND*	*34*	*22*	*41*	*18*	*28*	*-7*	*0.11*	*-0.28*	*0.11*	*0.21*	*31*	*0.85*	*45*	*92*	*60*	*0*	*7*	*1*	*0*
	LINCOLN	34	21	39	14	28	-8	0.83	0.40	0.71	0.88	119	2.52	127	93	61	0	7	3	1
	NORFOLK	34	21	40	16	27	-6	0.26	-0.13	0.22	0.36	52	1.20	61	92	58	0	7	3	0
	NORTH PLATTE	*37*	*20*	*45*	*8*	*29*	*-6*	*0.32*	*0.08*	*0.25*	*0.39*	*95*	*1.00*	*82*	*95*	*64*	*0*	*7*	*3*	*0*
	OMAHA	35	21	42	17	28	-8	0.80	0.38	0.80	0.92	126	2.91	129	96	63	0	7	1	1
	SCOTTSBLUFF	44	22	54	18	33	-2	0.46	0.24	0.33	0.75	192	1.05	78	95	49	0	7	2	0
	VALENTINE	*35*	*25*	*46*	*23*	*30*	*-1*	*0.11*	*-0.10*	*0.05*	*0.26*	*72*	*1.13*	*108*	*94*	*68*	*0*	*7*	*3*	*0*
NV	ELY	44	15	58	5	30	-4	0.11	-0.10	0.08	0.11	29	0.92	52	88	28	0	7	2	0
	LAS VEGAS	65	46	70	41	55	0	0.00	-0.11	0.00	0.00	0	0.08	7	42	15	0	0	0	0
	RENO	*50*	*26*	*65*	*22*	*38*	*-4*	*0.15*	*-0.03*	*0.06*	*0.15*	*44*	*2.16*	*89*	*72*	*22*	*0*	*7*	*3*	*0*
	WINNEMUCCA	47	18	60	10	33	-7	0.07	-0.10	0.01	0.08	26	2.13	127	88	34	0	7	2	0
NH	CONCORD	33	17	44	8	25	-5	0.14	-0.47	0.04	1.27	113	9.48	154	77	43	0	7	3	0
NJ	NEWARK	41	24	50	18	32	-8	0.15	-0.71	0.08	0.99	63	10.96	137	56	27	0	7	2	0
NM	ALBUQUERQUE	58	33	64	26	45	0	0.31	0.20	0.31	0.31	155	0.43	38	68	26	0	4	1	0
NY	*ALBANY*	*29*	*13*	*36*	*4*	*21*	*-11*	*0.05*	*-0.60*	*0.01*	*1.40*	*119*	*7.79*	*134*	*78*	*46*	*0*	*7*	*2*	*0*
	BINGHAMTON	22	11	28	4	16	-14	0.12	-0.50	0.01	1.48	131	7.78	133	85	58	0	7	3	0
	BUFFALO	25	12	31	-3	19	-13	0.00	-0.59	0.00	1.78	165	8.66	142	81	54	0	7	0	0
	ROCHESTER	*25*	*9*	*30*	*-6*	*17*	*-15*	*0.04*	*-0.46*	*0.01*	*3.15*	*342*	*7.76*	*152*	*84*	*53*	*0*	*7*	*1*	*0*
	SYRACUSE	23	10	28	0	16	-15	0.30	-0.29	0.25	2.41	225	9.16	164	82	50	0	7	3	0
NC	ASHEVILLE	42	27	51	21	35	-11	0.43	-0.64	0.26	1.13	57	10.80	118	84	32	0	7	2	0
	CHARLOTTE	50	28	60	25	39	-10	0.27	-0.78	0.24	0.56	29	6.75	71	72	21	0	6	2	0
	GREENSBORO	46	28	55	23	37	-10	0.12	-0.73	0.11	0.46	29	7.36	91	76	27	0	7	2	0
	HATTERAS	49	36	59	34	43	-8	0.51	-0.48	0.51	1.15	63	7.34	65	79	45	0	0	1	1
	RALEIGH	47	29	57	24	38	-11	0.29	-0.61	0.16	0.41	24	8.14	92	74	29	0	7	2	0
	WILMINGTON	55	33	61	27	44	-9	0.34	-0.57	0.34	0.54	32	7.34	79	76	31	0	2	1	0
ND	BISMARCK	34	24	45	17	29	4	0.14	0.00	0.06	0.17	71	1.70	148	93	73	0	7	4	0
	DICKINSON	35	24	51	20	30	2	0.09	-0.03	0.02	0.09	45	1.33	146	93	67	0	7	4	0
	FARGO	30	16	34	7	23	1	0.00	-0.20	0.00	0.05	14	1.41	94	91	66	0	7	0	0
	GRAND FORKS	29	9	33	3	19	-1	0.40	0.21	0.24	0.47	142	1.69	111	95	79	0	7	2	0
	JAMESTOWN	29	17	34	12	23	-1	0.09	-0.08	0.04	0.21	72	1.84	134	95	80	0	7	3	0
	WILLISTON	32	16	40	6	24	-2	0.08	-0.06	0.07	0.30	130	2.59	214	93	74	0	7	2	0
OH	AKRON-CANTON	30	15	36	7	23	-13	0.30	-0.44	0.28	2.13	160	8.44	148	94	47	0	7	2	0
	CINCINNATI	35	20	40	14	28	-13	0.64	-0.30	0.59	1.78	105	10.20	147	83	44	0	7	2	1
	CLEVELAND	29	17	33	2	23	-12	0.24	-0.40	0.17	1.75	152	7.46	139	91	59	0	7	3	0
	COLUMBUS	34	18	39	14	26	-13	0.57	-0.15	0.53	1.92	147	7.56	132	94	49	0	7	3	1
	DAYTON	31	15	34	9	23	-15	0.08	-0.67	0.07	0.95	71	8.86	157	90	52	0	7	2	0
	MANSFIELD	28	12	33	4	20	-15	0.01	-0.70	0.01	1.18	93	7.49	142	96	57	0	7	1	0

Based on 1961-90 normals

Weather Data for the Week Ending March 13, 1999

STATES AND STATIONS		TEMPERATURE °F						PRECIPITATION							RELATIVE HUMIDITY, PERCENT		NUMBER OF DAYS			
																	TEMP. °F		PRECIP	
		AVERAGE MAXIMUM	AVERAGE MINIMUM	EXTREME HIGH	EXTREME LOW	AVERAGE	DEPARTURE FROM NORMAL	WEEKLY TOTAL, IN.	DEPARTURE FROM NORMAL	GREATEST IN 24-HOUR, IN.	TOTAL, IN., SINCE Dec 1	PCT. NORMAL SINCE Dec 1	TOTAL, IN., SINCE Jan 1	PCT. NORMAL SINCE Jan 1	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE
	TOLEDO	31	14	36	4	22	-11	0.15	-0.42	0.13	0.88	86	5.71	127	82	52	0	7	2	0
	YOUNGSTOWN	28	12	33	1	20	-14	0.21	-0.47	0.17	2.14	174	9.56	177	93	49	0	7	2	0
OK	OKLAHOMA CITY	53	35	70	32	44	-4	2.71	2.11	1.83	2.71	253	5.72	152	89	55	0	2	5	2
	TULSA	50	33	64	28	42	-7	2.91	2.16	1.34	2.98	222	7.24	150	93	56	0	2	5	2
OR	ASTORIA	49	37	54	30	43	-2	4.04	2.37	1.50	5.54	177	37.60	181	99	74	0	2	7	3
	BURNS	36	17	40	12	26	-9	0.38	0.14	0.12	0.51	119	4.09	186	97	55	0	6	5	0
	EUGENE	53	35	58	28	44	-3	0.75	-0.56	0.35	1.41	58	19.11	119	94	47	0	3	4	0
	MEDFORD	52	33	62	27	43	-4	0.26	-0.18	0.13	0.63	78	8.60	158	90	34	0	3	3	0
	PENDLETON	50	32	59	28	41	-3	0.31	0.03	0.17	0.40	80	2.43	77	85	43	0	6	4	0
	PORTLAND	51	39	57	31	45	-2	1.04	0.20	0.52	2.32	148	17.67	164	93	45	0	1	4	1
	SALEM	52	36	57	27	44	-1	0.75	-0.25	0.47	2.50	134	23.52	191	94	46	0	2	4	0
PA	ALLENTOWN	35	20	45	15	28	-10	0.01	-0.72	0.00	0.80	60	8.90	119	68	35	0	7	1	0
	ERIE	28	16	33	0	22	-12	0.15	-0.50	0.05	1.05	88	7.85	138	82	50	0	7	2	0
	MIDDLETOWN	39	25	46	18	32	-7	0.09	-0.65	0.07	0.68	50	7.52	105	69	32	0	7	2	0
	PHILADELPHIA	40	25	49	19	32	-8	0.01	-0.75	0.01	0.84	60	8.68	117	80	43	0	7	1	0
	PITTSBURGH	32	15	37	6	23	-14	0.16	-0.60	0.16	1.24	91	8.52	135	91	41	0	7	1	0
	WILKES-BARRE	29	16	37	10	23	-12	0.02	-0.54	0.00	1.12	110	7.38	140	77	53	0	7	1	0
	WILLIAMSPORT	32	18	41	10	25	-11	0.16	-0.56	0.05	2.34	179	9.22	139	81	40	0	7	2	0
RI	PROVIDENCE	38	22	50	15	30	-5	0.14	-0.76	0.02	1.59	96	13.74	150	70	38	0	6	3	0
SC	BEAUFORT	60	39	65	35	49	-8	0.13	-0.83	0.13	0.13	7	5.07	58	88	33	0	0	1	0
	CHARLESTON	59	37	63	34	48	-9	0.12	-0.90	0.12	0.12	6	7.09	83	85	29	0	0	1	0
	COLUMBIA	54	33	60	28	43	-10	0.27	-0.86	0.27	0.28	13	6.57	62	82	27	0	3	1	0
	GREENVILLE	50	31	60	28	41	-9	0.56	-0.69	0.31	1.14	50	7.81	72	73	26	0	5	3	0
SD	ABERDEEN	34	21	42	18	27	1	0.13	-0.13	0.11	0.20	44	1.02	79	91	60	0	7	2	0
	HURON	33	22	42	16	28	-1	0.15	-0.20	0.09	0.15	25	0.80	48	94	63	0	7	3	0
	RAPID CITY	31	18	35	12	24	-8	0.28	0.08	0.24	0.68	194	0.93	75	96	81	0	7	2	0
	SIOUX FALLS	29	14	33	5	22	-8	0.89	0.56	0.83	0.91	163	1.54	90	96	63	0	7	2	1
TN	BRISTOL	44	26	49	20	35	-10	0.60	-0.25	0.21	1.55	99	9.46	115	83	32	0	7	2	0
	CHATTANOOGA	50	34	55	32	42	-7	1.31	-0.08	0.86	2.50	98	16.04	131	80	31	0	1	3	1
	KNOXVILLE	44	31	49	27	37	-10	1.36	0.18	0.84	2.91	135	12.43	120	84	43	0	5	3	1
	MEMPHIS	53	37	57	33	45	-6	3.20	2.00	2.24	4.42	202	12.67	123	84	42	0	0	5	1
	NASHVILLE	47	32	51	26	39	-9	1.05	-0.04	0.79	2.59	129	14.15	151	78	32	0	4	3	1
TX	ABILENE	62	43	79	33	52	-2	1.11	0.82	0.78	1.11	209	3.04	112	94	49	0	0	4	1
	AMARILLO	47	29	71	24	38	-8	0.54	0.32	0.31	0.54	138	3.21	214	96	50	0	7	3	0
	AUSTIN	71	53	83	42	62	3	1.77	1.36	1.32	1.79	227	2.03	44	93	48	0	0	5	1
	BEAUMONT	74	55	81	46	64	4	1.88	1.14	1.33	1.88	136	6.10	64	99	65	0	0	4	1
	BROWNSVILLE	82	67	85	56	75	7	0.04	-0.07	0.03	0.06	29	1.83	65	95	55	0	0	2	0
	CORPUS CHRISTI	80	66	88	50	73	9	0.03	-0.18	0.01	0.03	7	0.81	20	96	61	0	0	3	0
	DEL RIO	78	57	87	44	67	5	0.14	0.03	0.10	0.14	64	0.18	10	93	39	0	0	2	0
	EL PASO	68	42	75	35	55	1	0.00	-0.08	0.00	0.00	0	0.10	10	52	21	0	0	0	0
	FORT WORTH	61	46	77	39	54	-1	2.40	1.80	1.50	2.40	220	4.30	84	85	52	0	0	5	1
	GALVESTON	73	61	77	46	67	7	0.48	-0.02	0.40	0.48	52	3.85	60	97	69	0	0	4	0
	HOUSTON	78	56	84	45	67	7	1.33	0.67	1.02	1.33	108	4.25	57	95	51	0	0	5	1
	LUBBOCK	54	33	73	29	44	-6	0.32	0.13	0.16	0.32	89	1.67	118	95	39	0	2	3	0
	MIDLAND	65	40	80	31	53	-1	0.00	-0.14	0.00	0.00	0	0.33	26	92	21	0	1	0	0
	SAN ANGELO	67	45	80	36	56	0	0.55	0.36	0.49	0.55	153	1.17	52	93	40	0	0	3	0
	SAN ANTONIO	74	54	84	43	64	4	0.58	0.25	0.41	0.59	97	0.69	17	90	46	0	0	5	0
	VICTORIA	76	60	81	41	68	8	1.24	0.91	1.04	1.25	195	3.82	79	10	66	0	0	5	1
	WACO	63	47	78	40	55	-1	1.84	1.34	0.97	1.84	198	4.21	91	96	60	0	0	5	2
	WICHITA FALLS	58	40	74	33	49	-3	3.60	3.14	2.76	3.60	434	6.16	186	91	51	0	0	4	2
UT	SALT LAKE CITY	46	30	52	23	38	-2	0.24	-0.17	0.15	0.41	56	2.66	86	86	42	0	5	4	0
VT	BURLINGTON	22	8	29	-3	16	-12	0.42	-0.06	0.23	1.54	179	6.19	144	86	53	0	7	4	0
VA	LYNCHBURG	43	25	51	16	34	-10	0.15	-0.65	0.14	0.66	45	7.84	107	72	27	0	7	2	0
	NORFOLK	44	32	58	29	38	-9	0.37	-0.48	0.35	0.47	30	6.31	72	74	39	0	4	2	0
	RICHMOND	44	27	53	21	35	-11	0.19	-0.64	0.18	0.74	48	6.91	87	75	31	0	7	2	0
	ROANOKE	42	25	48	19	34	-11	0.34	-0.46	0.25	0.77	53	6.61	93	66	27	0	7	3	0
	WASH/DULLES	37	24	43	17	31	-11	0.85	0.13	0.83	1.72	130	9.72	142	74	40	0	7	2	1
WA	OLYMPIA	50	33	55	26	42	-1	1.45	0.28	0.84	4.00	181	31.77	199	99	50	0	3	5	1
	QUILLAYUTE	47	36	52	29	41	-2	4.96	2.24	1.89	7.86	154	49.21	153	99	62	0	1	7	3
	SEATTLE-TACOMA	50	38	54	31	44	-1	1.49	0.65	0.61	2.28	145	16.07	147	89	45	0	1	4	2
	SPOKANE	44	29	54	25	37	-1	0.03	-0.32	0.01	0.18	27	5.30	129	88	44	0	6	2	0
	YAKIMA	50	27	56	21	39	-3	0.02	-0.15	0.01	0.04	13	2.75	122	93	38	0	6	1	0
WV	BECKLEY	36	18	44	11	27	-13	0.38	-0.38	0.28	1.84	131	10.15	140	87	42	0	7	3	0
	CHARLESTON	39	23	44	17	31	-13	0.67	-0.16	0.57	2.35	156	9.83	132	90	47	0	7	4	1
	ELKINS	32	10	37	1	21	-17	0.74	-0.11	0.68	2.06	134	10.83	142	93	45	0	7	4	1
	HUNTINGTON	39	23	45	19	31	-13	0.42	-0.41	0.39	1.90	126	8.95	124	84	41	0	7	3	0
WI	EAU CLAIRE	36	17	42	9	27	0	0.31	-0.02	0.19	0.36	63	3.07	135	89	46	0	7	2	0
	GREEN BAY	35	17	42	8	26	-1	0.13	-0.30	0.11	0.20	26	2.69	91	88	45	0	7	2	0
	LACROSSE	39	18	46	10	29	-1	0.36	-0.03	0.27	0.39	57	4.01	158	88	37	0	7	2	0
	MADISON	33	14	41	3	24	-6	0.30	-0.15	0.19	0.42	54	3.43	117	89	51	0	7	2	0
	MILWAUKEE	31	21	36	11	26	-5	0.11	-0.44	0.03	0.37	39	5.73	143	85	57	0	7	2	0
WY	CASPER	44	21	55	18	33	1	0.18	-0.01	0.12	0.32	97	0.85	58	92	40	0	7	4	0
	CHEYENNE	41	20	51	12	30	-2	0.21	0.00	0.19	0.42	114	0.89	77	91	39	0	7	2	0
	LANDER	45	22	57	17	34	1	0.16	-0.06	0.14	0.16	42	0.90	62	84	29	0	7	2	0
	SHERIDAN	41	18	57	9	29	-3	0.19	0.00	0.12	0.50	152	1.09	63	94	51	0	7	2	0

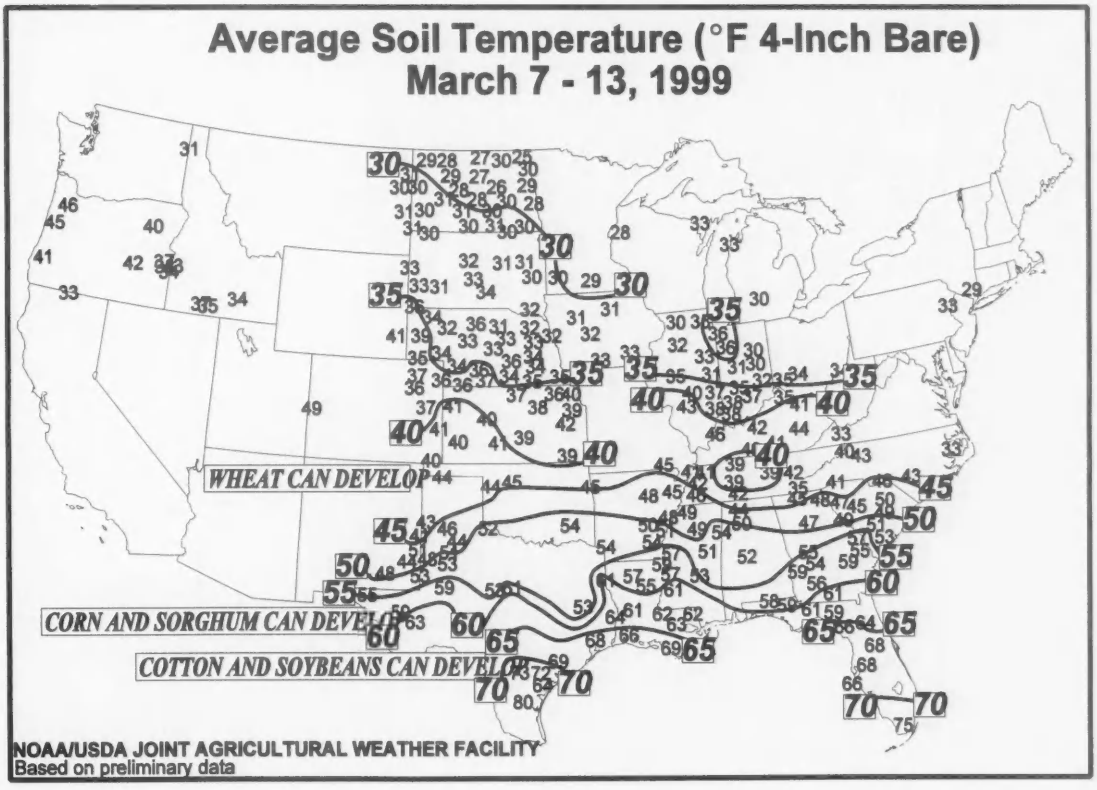
NOTE: These data are preliminary and subject to change. In the past, precipitation totals from a number of stations have been incomplete.

National Agricultural Summary

March 8 - 14, 1999

HIGHLIGHTS

A winter storm developed in the western Corn Belt early in the week and moved eastward through the Ohio Valley, Appalachian Mountains, and Atlantic Coast States. The storm delivered a mixture of precipitation, including a wide swath of heavy snow from the Corn Belt to the Atlantic Coast. That storm, and a second one after midweek, moistened soils in the lower Mississippi Valley, and adjacent areas of the Great Plains and Southeast. In eastern Texas, the wet conditions halted fieldwork, but improved soil moisture supplies, aiding germination of recently planted corn, cotton, and sorghum crops. The rain also aided winter wheat development in most areas of the southern Great Plains until late-week, when colder weather arrived and hindered vegetative growth. In Oklahoma and the central Great Plains, snow rejuvenated soil moisture levels and curbed insect activity. Most of Florida and the southern Atlantic Coastal Plains remained in a dry pattern. Temperatures averaged well below normal in the Southeast, but freeze damage to fruit crops was minimal. Cool, dry weather continued in the Southwest, and cool, wet weather persisted in the Pacific Northwest. In California, field activities continued with no significant delays, and small grains, winter forages, alfalfa, and sugar beets continued to rapidly grow in most areas. Crops in the Sacramento Valley were recovering from excessive wetness. In the Rocky Mountains and across the northern Great Plains, temperatures averaged near normal with scattered snowfall.


Average Soil Temperature (°F 4-Inch Bare)
March 7 - 13, 1999
WHEAT CAN DEVELOP
CORN AND SORGHUM CAN DEVELOP
COTTON AND SOYBEANS CAN DEVELOP
NOAA/USDA JOINT AGRICULTURAL WEATHER FACILITY
Based on preliminary data

Winter Weather Review

Highlights: La Niña-driven dryness developed across the South, especially during February. Drier-than-normal weather persisted throughout the winter in southern California, the Four Corners region, and southern Texas, depleting topsoil moisture. In contrast, record or near-record precipitation drenched (or blanketed) the Pacific Northwest, especially in and west of the Cascades. By winter's end, soil moisture was generally adequate elsewhere across the Nation, except locally excessive in the Ohio Valley and Northeast, and somewhat short in the Southeast.

The winter's only significant period of cold weather lasted a month, from mid-December to mid-January, but featured a severe California freeze and extreme cold following a Midwestern blizzard. Winter temperatures ranged from as much as 3°F below normal in California to generally 2 to 7°F above normal from the Rockies eastward.

December: A California cold wave (December 21-25) severely damaged citrus in the San Joaquin Valley and held monthly temperatures as much as 4°F below normal. Although cooler air also overspread the remainder of the Nation toward month's end, temperatures averaged 4 to 10°F above normal across the Midwest and 2 to 8°F above normal in the East. During the first 8 days of the month, nearly 500 daily-record highs were set or tied, while more than 50 locations noted December-record warmth.

Heavy precipitation continued across the Pacific Northwest for the second consecutive month, contributing to late-month flooding west of the Cascades. Farther south and east, however, most areas from California to the Northeast received below-normal precipitation. A series of low-pressure systems crossed the South, producing more than 4 inches of precipitation from southeastern Oklahoma and eastern Texas to North Carolina and southern Virginia, including an ice storm from December 22-24.

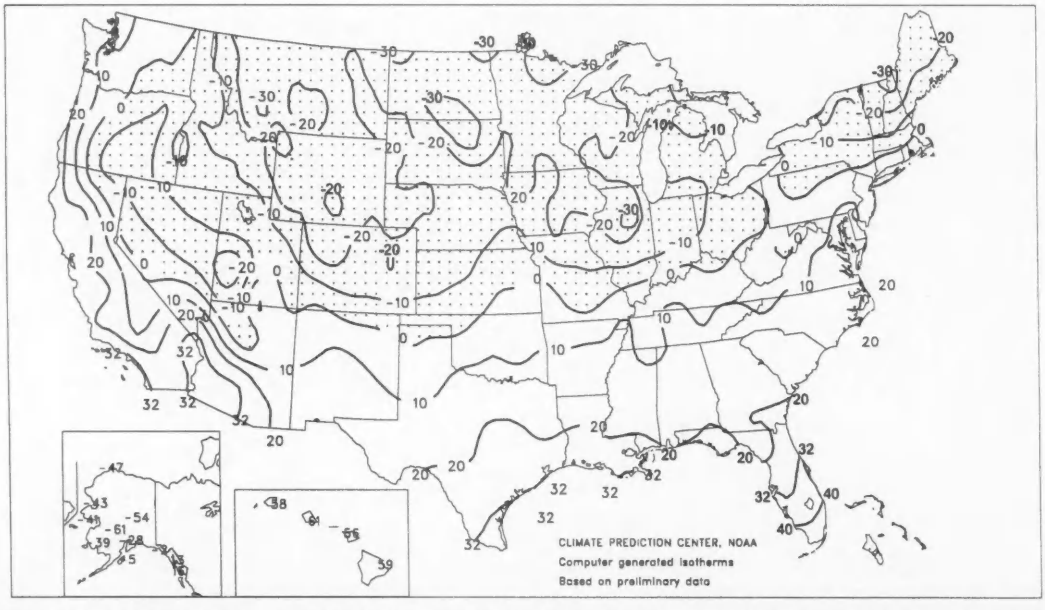
January: A very cold pattern east of the Rockies yielded to coast-to-coast warmth. Monthly temperatures averaged near normal across the Midwest, where cold air clung stubbornly following an early-month blizzard. Departures reached +10°F in the Rocky Mountain region and +8°F in the Southeast.

Precipitation topped 4 inches in and west of the Cascades and Sierra Nevada, and in most areas east of a line from eastern Texas to Lake Michigan. From the lower Ohio Valley southward to the Gulf Coast, extremely wet conditions (more than 8 inches) and lowland flooding were accompanied by two severe thunderstorm outbreaks (January 17 and 21-22). The Nation's preliminary tornado count (169) was a January record. A late-month storm delivered beneficial precipitation to the central and southern Plains.

February: A complete summary appeared in last week's *Bulletin*.

Winter Extreme Minimum Temperature (°F)

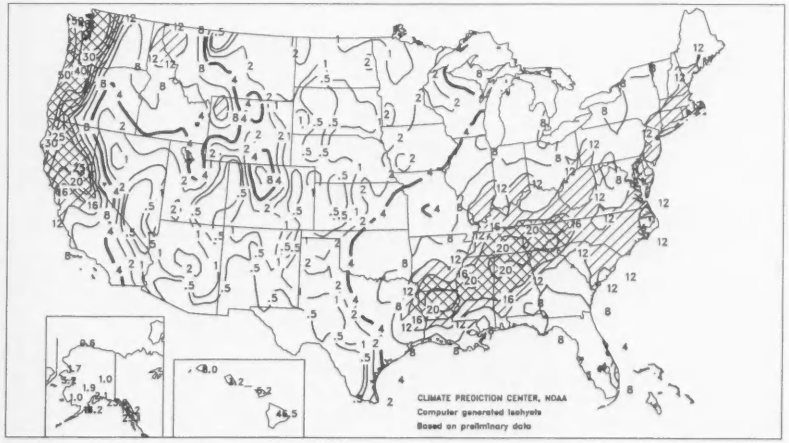
DEC 1998 - FEB 1999



Despite their scarcity during the winter of 1998-99, cold outbreaks were widely noticed, especially from mid-December to mid-January. On December 23, Bakersfield, CA registered an all-time record-tying low (19°F) during a period of severe freezes that cut California's orange production 39 percent from USDA's pre-freeze estimate. Less than 2 weeks later, bitterly cold weather trailed an early-January blizzard into the Midwest, resulting in a State-record low (-36°F on January 5) in Congerville, IL. Meanwhile, the South escaped significant crop damage, although Tampa, FL (30°F on January 6) recorded their first freeze since January 19, 1997. Fortunately, the Lower 48 dodged a severe cold wave that overtook Alaska from late-January to mid-February, when Chandalar Lake (-74°F on January 29) posted an all-time-record low and Fairbanks (-55°F on February 5) logged their lowest temperature in more than 24 years.

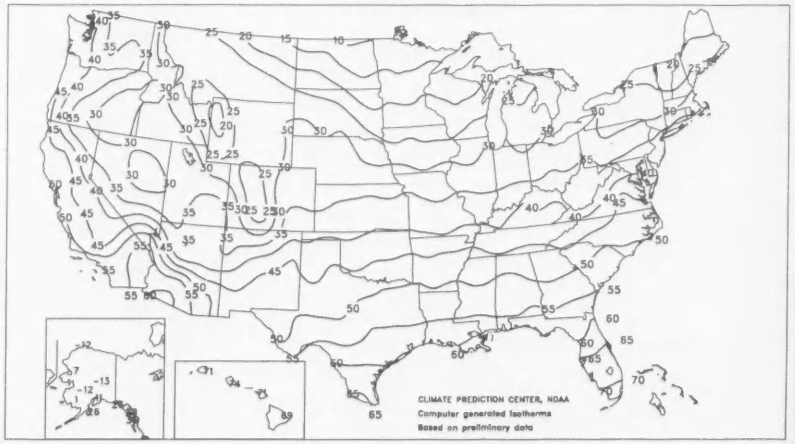
Winter Total Precipitation (Inches)

DEC 1998 - FEB 1999



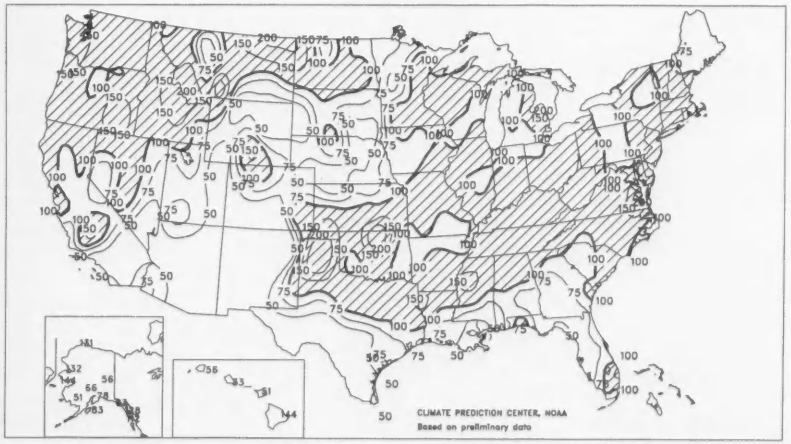
Winter Average Temperature (°F)

DEC 1998 - FEB 1999



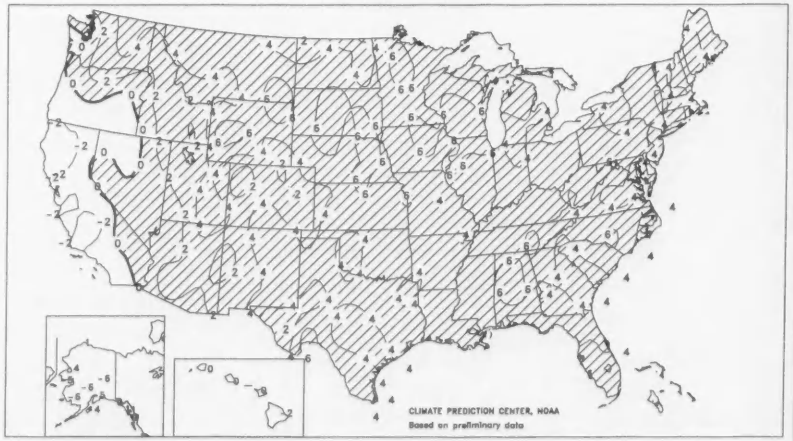
Winter Percent of Normal Precipitation

DEC 1998 - FEB 1999



Winter Departure from Normal Average Temperature (°F)

DEC 1998 - FEB 1999



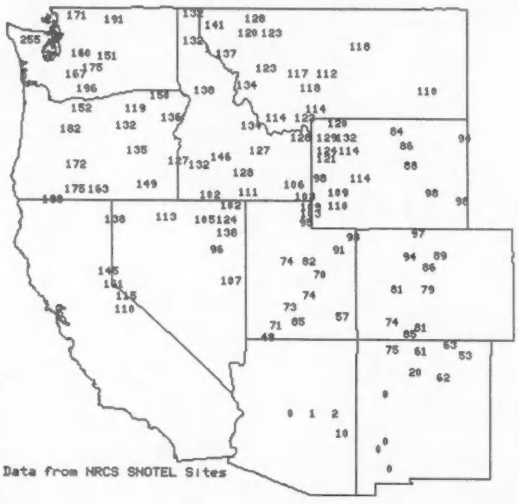
Water Supply Forecast for the Western United States

Seasonal Mountain Snowpacks

As of March 11, 1999, snowpack conditions continue to look favorable for supplying adequate spring and summer runoff in most areas except New Mexico and Arizona (fig. 1). Season-to-date precipitation through March 11 was less than 70 percent of normal throughout Arizona and southern New Mexico (fig. 2). Farther north, parts of Idaho and the Cascades of Oregon and Washington are reporting record snowpacks at over 50 SNOTEL sites. The Sierra Nevada near Lake Tahoe and the Northern Rockies are reporting above- to well-above-average snowpacks. Snowpacks across Colorado and Utah remain slightly below average. Snowpacks in Arizona and New Mexico are essentially non-existent except in northern New Mexico where they are well below normal. Conditions in Alaska are well below average except in the Kenai Basin near the Gulf of Alaska.

SNOTEL - River Basin Snow Water Content

Figure 1 Basin Average Snow Water Content. (% of Average.)

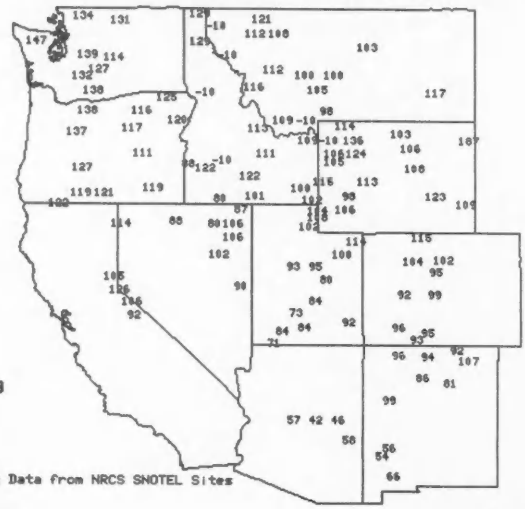


Data provided by
Water and Climate Center
National Resource Conservation Service
Portland, Oregon

Western Regional Climate Center
Desert Research Institute
Reno, Nevada

SNOTEL - River Basin Precipitation

Figure 2 Basin Average Precipitation. (% of Average.)
OCTOBER 1 , 1998 thru MARCH 11 , 1999



Data provided by
Water and Climate Center
National Resource Conservation Service
Portland, Oregon

Western Regional Climate Center
Desert Research Institute
Reno, Nevada

Spring and Summer Streamflow Forecasts

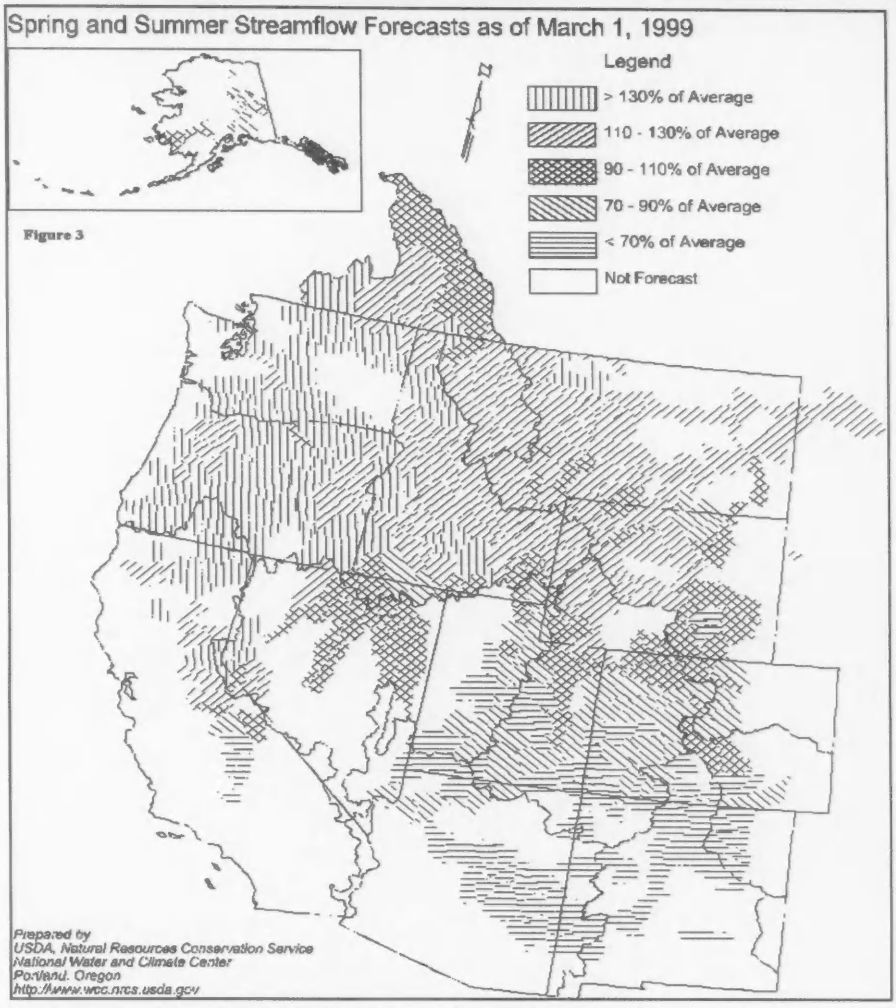
As of March 1, 1999, the West continues to show the effects of a strong La Niña (fig. 3). Spring and summer streamflows are forecast to be well above average in Oregon, Washington, and Idaho. Above-average streamflow is forecast for Montana, northern California, western Nevada, and Wyoming. Spring and summer streamflows are forecast to be below average in Utah, Colorado, and northeastern Nevada. Forecasted streamflow is extremely low in New Mexico and Arizona.

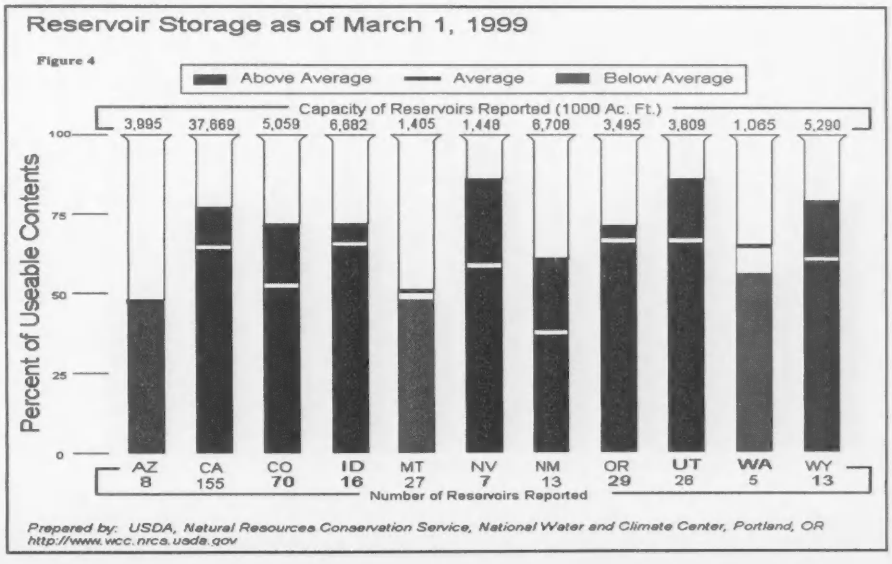
Reservoir Storage

As of March 1, 1999, major storage in the reservoirs of the West are generally near or above average for this time of year (fig. 4). Montana and Washington are reported slightly below-average storage levels. In New Mexico and Arizona, concerns are focusing on drought abatement measures that can be implemented should the need arise.

For More Information

Please visit the National Water and Climate Center Homepage at http://www.wcc.nrcs.usda.gov





International Weather and Crop Summary

March 7 - 13, 1999

HIGHLIGHTS

FSU-WESTERN: A cooling trend was accompanied by widespread rain and snow in most winter grain areas.

EUROPE: Continued unseasonably mild weather caused winter grains to begin breaking dormancy in eastern Europe, while crops rapidly developed in the west.

NORTHWESTERN AFRICA: Timely rain in Morocco benefited winter grains approaching the heading stage.

AUSTRALIA: Much-needed drier weather aided cotton and sorghum maturation and early harvests.

SOUTH AFRICA: Late-week scattered showers brought some relief to heat-stressed corn and other summer crops.

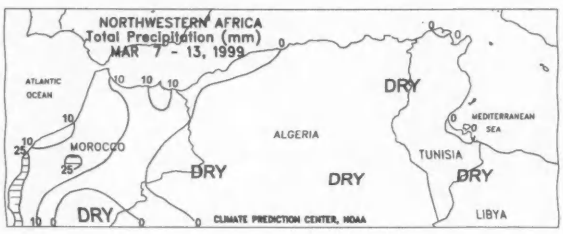
SOUTHEAST ASIA: Drier weather eased wetness in the eastern Philippines, while showers slowed rice harvesting in Java, Indonesia.

EASTERN ASIA: Rain continued to benefit vegetative winter wheat across the southern North China Plain, and widespread showers increased moisture supplies for early rice transplanting in southern China.

SOUTH AMERICA: Variable showers prevailed across the region, slowing summer crop harvesting.

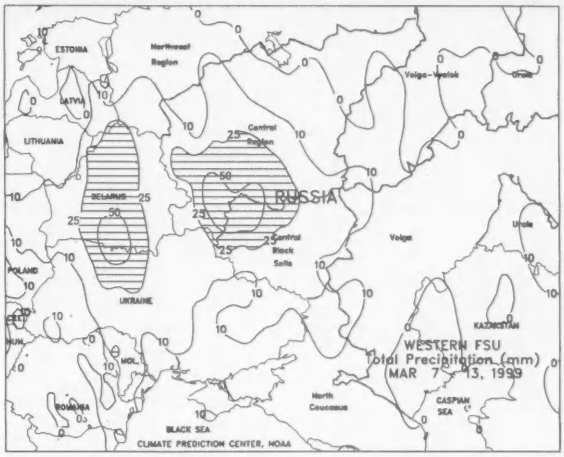
EUROPE

The third consecutive week of unseasonably mild weather prevailed over the continent, prompting winter grains to begin breaking dormancy in most areas. The exception was in Poland, where temperatures remained cool enough to keep crops dormant. Winter grains in western Europe were rapidly developing. Showers (10-39 mm) extended from England eastward through northern France into Germany, slowing spring wheat and spring barley planting. Light to moderate rain fell in Spain and Portugal, improving moisture conditions for drought-stressed winter grains and increasing topsoil moisture for spring-planted crops. Greatest amounts of rain (29-63 mm) fell in southern Portugal and western and easternmost areas in Spain. Lesser amounts of rain (4-11 mm) were observed in the middle of Spain. Farther east, light showers fell in peninsular Italy, increasing topsoil moisture for early summer crop planting. Mild, generally dry conditions in Hungary and northwestern Romania continued to ease flooding and allowed river levels to further recede. Unseasonably warm, dry weather in Serbia favored early sugar beet planting. Weekly temperatures averaged 2 to 6 degrees C above normal in southeastern Europe.



NORTHWESTERN AFRICA

Timely rain (10-27 mm) in Morocco benefited winter grains nearing the heading stage. Farther east, mostly dry weather prevailed over crop areas in Algeria and Tunisia. The dry weather in Algeria was of little concern since it followed significant rain last week. However, soil moisture reserves were becoming unfavorably low in Tunisia, due to a drying trend that has persisted over the country since the beginning of February. Yield prospects for the winter grain crop in Morocco, Algeria, and Tunisia will be highly dependent on rain in upcoming weeks as the crop advances through the reproductive and filling stages of development. Weekly temperatures averaged near normal in Algeria and Tunisia, and 1 to 2 degrees C below normal in Morocco.

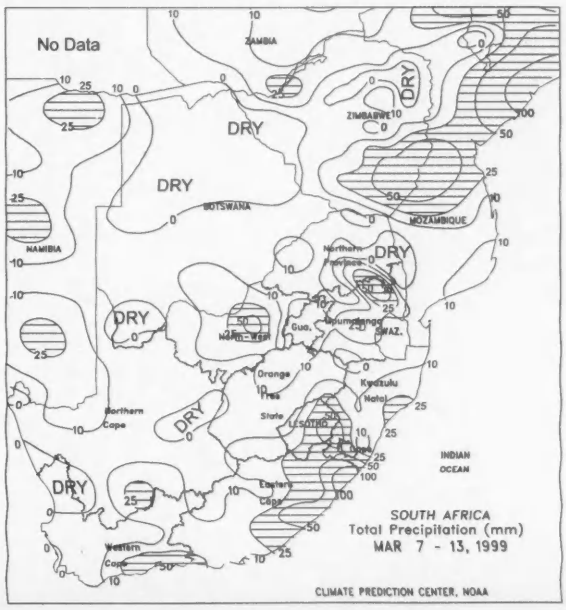


FSU-WESTERN

A cooling trend was accompanied by widespread rain and snow in most winter grain areas. Greatest amounts of precipitation (10-50 mm, with local amounts in excess of 50 mm) were observed in Belarus, central Ukraine, and bordering areas in Russia (Central Region and Black Soils Region). Lesser amounts of moisture (4-10 mm) fell in the Baltics and remaining areas in Russia. Rain changed to snow in western areas, with heavy snow falling in Belarus and adjacent areas in Russia. Although temperatures did not fall low enough to threaten winter grains, the colder weather kept winter grains dormant in most areas. However, greening of winter grains was likely in crop areas near the Black Sea Coast, where weekly temperatures have averaged 5 to 10 degrees C for the past 3 weeks. Typically, winter grains break dormancy in Ukraine and the North Caucasus region in Russia in early April.

EASTERN ASIA

Rain (5-25 mm) continued to benefit vegetative winter wheat across the southern North China Plain (central and southern Henan and northern Anhui and Jiangsu). Seasonably dry weather prevailed elsewhere in the North China Plain, where supplemental irrigation will be needed for wheat growth. Cooler weather slightly slowed wheat growth across the North China Plain, as temperatures averaged near normal for the first time since mid-January. Widespread rain (15-60 mm) covered the lower Yangtze Valley and southeastern China, increasing moisture supplies for early double-crop transplanting. The heaviest amounts (70-95 mm) were reported in Jiangxi, northern Fujian, and western Zhejiang.

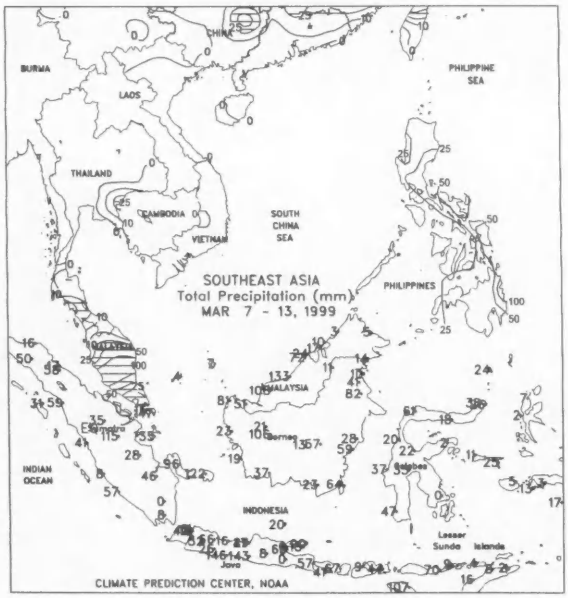


SOUTH AFRICA

Widespread showers (10-25 mm or more, locally exceeding 50 mm) brought some relief to heat-stressed corn and other summer crops at week's end. The heaviest rain in the corn belt (25 mm or greater) was recorded across the north (North West to Mpumalanga) and in southern growing areas east of Lesotho. Unfavorably dry, warm weather persisted in eastern sections of Free State, resulting in some additional stress. However, temperatures in that area dropped to more seasonable levels later in the week, providing limited stress relief. Moderate to heavy rain (25-50 mm or more) helped replenish moisture reserves in coastal crop areas also affected by the heat wave. Rainfall was especially welcomed in rainfed sugarcane areas of KwaZulu Natal.

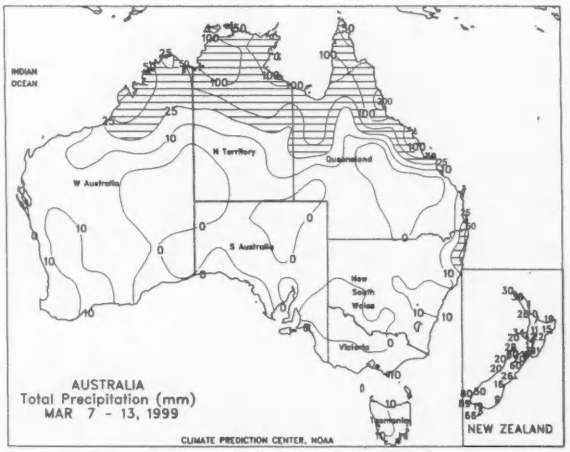
SOUTHEAST ASIA

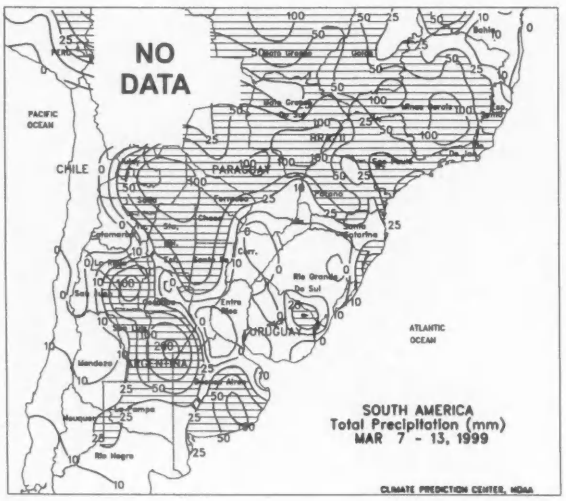
Rainfall (30-70 mm, with isolated amounts greater than 100 mm) tapered off from last week, easing excessive wetness across the eastern Philippines. In Vietnam, mostly dry weather aided winter-spring rice transplanting in the Red River Delta and rice harvesting in the south. Dry weather prevailed across Thailand, while heavy showers (50-170 mm) slowed oil palm fieldwork in peninsular Malaysia. In Java, Indonesia, moderate showers (25-70 mm, with isolated amounts greater than 100 mm) slowed main-season rice harvesting.



AUSTRALIA

Favorably drier weather covered the main cotton and sorghum areas of Queensland and New South Wales, giving maturing crops a chance to dry out. Early harvesting is usually underway by now but has been delayed by the late-summer wetness. Along the eastern coast, locally heavy showers (50-100 mm or more) persisted over sections of the sugarcane belt, exacerbating flooding in northern and southernmost growing areas. Elsewhere, drier weather returned to grazing and pasture lands across the southeast, as light to moderate rain (3-34 mm) developed over Western Australia's agricultural region. In New Zealand, widespread rain (10-25 mm or more, locally exceeding 50 mm) brought relief to drought-stricken pasture and crop lands in South Island and southern and central North Island.





SOUTH AMERICA

In central Argentina, variable showers maintained soil moisture for summer crops. The heaviest amounts were in southern Cordoba (100-270 mm), causing local flooding. Mostly dry weather prevailed across southern Santa Fe and northern Buenos Aires, favoring corn harvesting. Light to moderate showers (10-60 mm, with isolated amounts greater than 100 mm) covered central and southern Buenos Aires, slowing corn and sunflower harvesting. Moderate rain (10-30 mm) also slowed cotton and soybean harvesting in northern Argentina and southern Paraguay. According to reports as of March 5, corn was 6 percent harvested, compared with 5 percent last year, and sunflower was 30 percent harvested, compared with 28 percent last year. In southern Brazil, mostly dry weather prevailed across Rio Grande do Sul, where soil moisture should be adequate for filling soybeans. Elsewhere, moderate to heavy showers (50-170 mm) slowed soybean harvesting. Temperatures averaged near normal across central Argentina and southern Brazil.

La Niña Update: March 5, 1999

The following is derived from the Diagnostic Advisory 99/3 issued by the Climate Prediction Center/National Centers for Environmental Prediction (NCEP) on March 5, 1999.

Cold episode conditions continued to dominate the tropical Pacific oceanic and atmospheric circulation patterns during February. Similar to previous months, below-normal sea surface temperatures (SSTs) prevailed throughout the equatorial Pacific east of New Guinea. SSTs were more than 1°C below normal from 165°E eastward to near 110°W, and more than 2°C below normal from 170°E to 165°W. These cooler-than-normal waters contributed to a vigorous Walker circulation characterized by stronger-than-normal low-level easterlies and enhanced upper-level westerlies throughout the central equatorial Pacific, and a general absence of deep convection and rainfall over the equatorial central Pacific.

Despite the overall continuation of La Niña conditions, an abrupt warming of the surface waters occurred in the eastern equatorial Pacific during late February (Figure). In many places east of 120°W, negative SST anomalies were replaced by positive anomalies. However, this warming will likely be short-lived, as the thermocline remains shallower than normal throughout the eastern and central equatorial Pacific.

Given the strength and evolution of existing La Niña conditions, we expect the cold episode to last for at least the next 3 to 6 months. This is supported by most available statistical and coupled model predictions. Based on current conditions in the tropical Pacific, on the NCEP SST predictions, and on results from historical studies on the effects of cold episodes, we expect wetter-than-normal conditions to continue through March over Indonesia, northern Australia, and southern Africa. Wetter-than-normal conditions are expected to develop over Northeast Brazil and continue through May. Over the southern United States during the next 3 months, drier- and warmer-than-normal conditions are expected in southern sections from southern California eastward to the Carolinas. Wetter-than-normal conditions are expected in the northern Great Plains and upper Midwest. Cooler-than-normal conditions are likely over western and central Canada and Alaska.

Weekly updates for SST, 850-hPa wind, and OLR are available on the Climate Prediction Center homepage at:

http://nic.fb4.noaa.gov

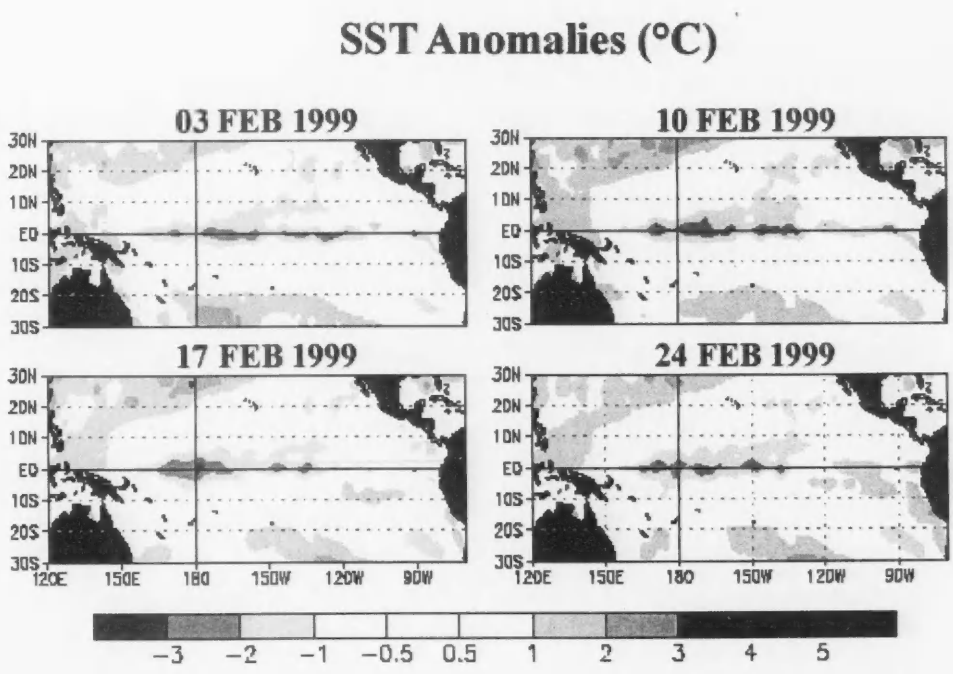


Figure. Weekly sea surface temperature anomalies during February 1999. Contour interval is 1°C. Departures from average (anomalies) are computed based on the 1950-1979 adjusted OI climatology (Reynolds and Smith 1995, *J. Climate*, **8**, 1571-1583).

The *Weekly Weather and Crop Bulletin* (ISSN 0043-1974) is published weekly and jointly prepared by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) and the U.S. Department of Agriculture (USDA). Publication began in 1872 as the *Weekly Weather Chronicle*. It is issued under general authority of the Act of January 12, 1895 (44-USC 213), 53rd Congress, 3rd Session. NOAA is responsible for managing, printing, and distributing the bulletin. The contents may be reprinted freely, with proper credit.

Annual subscriptions: domestic first class **$45**, foreign **$55** (in U.S. funds by international money order or check drawn on U.S. bank) payable to **U.S. Department of Commerce, NOAA**. POSTMASTER: Send address changes to: **Climate Prediction Center, W/NP52, Attn: *Weekly Weather and Crop Bulletin*, Room 605, WWBG, 5200 Auth Road, Camp Springs, MD 20746-4304**. Order subscriptions from the office and address listed above. First-class postage paid at Washington, DC, and other mailing offices. Correspondence to the meteorologists should be directed to: **Weekly Weather and Crop Bulletin, NOAA/USDA, Joint Agricultural Weather Facility, USDA South Building, Room 5844, Washington, DC 20250.** Internet URL: **http://www.usda.gov/oce/waob/jawf**; E-mail address: ***wwcb@jawfsrv.wwb.noaa.gov***

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service/Climate Prediction Center
Managing Editor ..... ***David Miskus*** *(202) 720-7919*
Meteorologists ..... ***Jeff Savadel***
..... ***Brian Morris*** and ***Clinton Wallace***
Special Requests ..... (202) 720-7917
Subscriptions .... ***John Kopman*** (301) 763-8000 ext 7534
..... **fax:** (301) 763-8125

U.S. DEPARTMENT OF AGRICULTURE
Economic Research Service
E.R.S. Editor ..... ***Sharon Lee***
National Agricultural Statistics Service
Agricultural Statistician ..... ***Mark Miller*** (202) 720-7621
State Summaries Editor ... ***Klara Greene*** (202) 720-8033
World Agricultural Outlook Board
International Editor ..... ***Tom Puterbaugh***
U.S. Editor ..... ***Brad Rippey*** (202) 720-2397
Agricultural Weather Analysts ..... ***Mark Brusberg***
..... ***Bob Stefanski*** and ***Michael Toth***
Secretary ..... ***Teressa Davis*** (202) 720-9807

Weather Data for Selected Locations in the Delta

Weather Data for the Week Ending March 13, 1999

Data provided by the Mississippi State Delta Research and Extension Center and compiled by USDA/OCE/WAOB's Stoneville Field Office

STATES AND STATIONS		TEMPERATURE °F						PRECIPITATION							4-INCH SOIL TEMP, °F		NUMBER OF DAYS			
																	TEMP. °F		PRECIP	
		AVERAGE MAXIMUM	AVERAGE MINIMUM	EXTREME HIGH	EXTREME LOW	AVERAGE	DEPARTURE FROM NORMAL	WEEKLY TOTAL, IN.	DEPARTURE FROM NORMAL	GREATEST IN 24-HOUR, IN.	TOTAL, IN., SINCE Mar 1	PCT. NORMAL SINCE Mar 1	TOTAL, IN., SINCE Jan 1	PCT. NORMAL SINCE Jan 1	AVERAGE MAXIMUM	AVERAGE MINIMUM	90 AND ABOVE	32 AND BELOW	.01 INCH OR MORE	.50 INCH OR MORE
MS	INDIANOLA 1S	56	42	82	35	49	–	2.32	–	0.98	3.77	–	15.22		54	50	0	0	3	3
	INVERNESS 5E	59	43	85	36	51	–	1.41	–	0.81	2.44	–	–	–	59	53	0	0	3	2
	LYON	54	38	59	33	46	–	3.23	–	2.02	4.06	–	14.77	–	–	–	0	0	3	2
	ONWARD	59	47	86	39	53	–	3.53	–	1.31	4.62	–	14.92	–	55	53	0	0	6	4
	SIDON	60	42	86	36	51	–	1.14	–	0.85	2.52	–	14.69	–	58	53	0	0	3	1
	STONEVILLE *	57	39	84	34	48	-4	1.85	0.86	1.22	2.11	98	17.21	147	59	50	0	0	2	2

*** Based on 1964-93 normals.**

Weather and Crop Summary: Seasonably cooler weather prevailed for most of the week, with moderate to heavy rainfall toward the week's end. The rainy weather hampered fieldwork but improved soil moisture throughout the Mississippi Delta. The rainfall also benefited winter wheat. Soil temperatures remained near normal as the planting season nears.

U.S. Crop Production Highlights

The following information was released by USDA's Agricultural Statistics Board on March 11, 1999. Forecasts refer to March 1.

The **all orange** production forecast from 1998-99 is 10.2 million tons, down 1 percent (%) from last month and down 27% from last year's record-large crop of 13.9 million tons. Florida's all orange forecast is decreased to 192 million boxes (8.64 million tons), 1% lower than the February forecast and 21% lower than the record-large 244 million boxes produced last season. Early and midseason varieties in Florida are forecast at 114 million boxes (5.13 million tons), down 2% from February and down 19% from a year ago. Florida's Valencia forecast remains unchanged at 78 million boxes (3.51 million tons), 25% below last season's 104 million boxes. California's all orange production forecast of 38 million boxes (1.43 million tons) is carried forward from January and is 49% less than last season. The Navel orange forecast is 19 million boxes (712,500 tons), down 57% from last year, and the Valencia forecast is 19 million boxes (712,500 tons), 37% less than a year ago.

Climate Prediction Center, W/NP52
Attn: *Weekly Weather & Crop Bulletin*
NOAA/NWS/NCEP/CPC
5200 Auth Road
WWB, Room 605
Camp Springs, MD 20746-4304

WEEKLY NEWS BULLETIN
FIRST CLASS

FIRST CLASS MAIL
POSTAGE & FEES PAID
NOAA
PERMIT NO. G-19

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

WWCB 1

UMI
Periodicals check In
P.O.Box 1346
Ann Arbor MI 48106-1346